

**REMARKS:**

This application has been carefully reviewed in light of the Office Action dated September 22, 2005. Claims 14–40 remain in the application, with new Claims 32–40 having been added herein. Claims 1–13 have been cancelled, without prejudice or disclaimer of the subject matter contained therein. Claims 14–18, 20, 23, 24 and 27–31 have been amended. Claims 14, 20, 24 and 32 are the independent claims currently under consideration in the application. Reconsideration and further examination are respectfully requested.

Initially, Claims 15–18, 23 and 27–31 have been amended to correct minor typographical errors and to place these claims in better form. No new subject matter is believed to have been added to the application with these amendments.

The specification has been amended to correct several minor typographical errors. No new subject matter is believed to have been added to the application with these amendments.

New Claims 32–40 have been added. Support for these claims can be found throughout the original specification and claims, for example in paragraphs [0028] and [0029] and original Claims 1–13, and throughout the disclosure of U.S. Patent No. 5,905,591 (“Duncan”), which was incorporated by reference in paragraph [0029], for example in column 7, lines 20-25 of Duncan.

Claims 1-31 were rejected under 35 U.S.C. § 102(b) over U.S. Patent No. 4,136,954 (“Jamieson”). Reconsideration and withdrawal of these rejections are respectfully requested.

The present invention concerns Fourier spectrometry. With reference to the particular claim language, amended independent Claim 14 is directed to a spectrometer including a plurality of sub-aperture telescopes forming an extended aperture telescope. Each sub-aperture telescope includes an adjustable-optical path and is configured to collect a select portion of a wavefront. A center-to-

center spacing between adjacent sub-aperture telescopes of the plurality of sub-aperture telescopes is not greater than  $2d$ , where  $d$  is a diameter of one of the adjacent sub-aperture telescopes. The spectrometer further includes combiner optics configured to interfere the select portions of the wavefront at an image plane of the plurality of sub-aperture telescopes to form interference patterns at the image plane. The spectrometer further includes a Fourier transformation module configured to derive spectral information from the interference patterns.

Amended independent Claim 20 is directed to a spectrometer including a Fizeau interferometer having a plurality of optical collectors. One or more of the optical collectors includes an adjustable-optical path. Each optical collector is configured to collect a select portion of a wavefront. A center-to-center spacing between adjacent optical collectors of the plurality of optical collectors is not greater than  $2d$ , where  $d$  is a diameter of one of the adjacent optical collectors. The spectrometer further includes a Fourier transformation module configured to derive spectral information of the wavefront from interference patterns of the select portions of the wavefront.

Amended independent Claim 24 is directed to a method for deriving spectral information from a wavefront. The method includes the step of collecting a plurality of select portions of a wavefront with a corresponding plurality of sub-aperture telescopes which form a multi-aperture telescope. A center-to-center spacing between adjacent sub-aperture telescopes of the plurality of sub-aperture telescopes is not greater than  $2d$ , where  $d$  is a diameter of one of the adjacent sub-aperture telescopes. The method further includes the steps of interfering the select portions of the wavefront at an image plane of the multi-aperture telescope to form interference patterns at the image plane, and of Fourier transforming the interference patterns to derive spectral information for the wavefront.

New independent Claim 32 is directed to a spectrometer including a plurality of sub-aperture telescopes. Each sub-aperture telescope is configured to collect a select portion of a wavefront. A center-to-center spacing between adjacent sub-aperture telescopes of the plurality of sub-aperture telescopes is not greater than  $2d$ , where  $d$  is a diameter of one of the adjacent sub-aperture telescopes. At least one of the plurality of sub-aperture telescopes includes an adjustable-optical path. The spectrometer further includes combiner optics configured to interfere the select portions of the wavefront at an image plane of the plurality of sub-aperture telescopes to form interference patterns at the image plane. The spectrometer further includes a Fourier transformation module configured to derive spectral information from the interference patterns.

The applied reference is not seen to disclose or suggest the features of the present invention, particularly with respect to at least the feature of a plurality of sub-aperture telescopes or optical collectors wherein a center-to-center spacing between adjacent sub-aperture telescopes or optical collectors of the plurality of sub aperture telescopes or optical collectors is not greater than  $2d$ , where  $d$  is a diameter of one of the sub-aperture telescopes or optical collectors.

Jamieson is seen to be generally directed to a spatial-spectral interferometer. Specifically, Jamieson discloses an interferometer with an optical section having a plurality of mirrors for directing received radiation to a planar transducer array. See Jamieson, col. 6, ll. 14-16 and Fig. 1. While Jamieson discloses embodiments with an aperture divided into four parts, each comprising a 20cm x 20cm identical mirror (20) (Jamieson, col. 10, ll. 62-64 and Fig. 3), the distance between adjacent mirrors (20) in Fig. 3 is understood to be 56.6cm ( $40 * \sqrt{2}$  cm), almost three times the diameter of the 20cm mirrors. Nowhere is Jamieson understood to disclose that a center-to-center spacing between adjacent sub-aperture telescopes or optical collectors of the plurality of sub

aperture telescopes or optical collectors is not greater than  $2d$ , where  $d$  is a diameter of one of the sub-aperture telescopes or optical collectors.

Accordingly, the applied reference is not seen to disclose, teach or suggest the combination of features of amended independent Claims 14, 20 or 24, or of new independent Claim 32, particularly the feature of a plurality of sub-aperture telescopes or optical collectors wherein a center-to-center spacing between adjacent sub-aperture telescopes or optical collectors of the plurality of sub aperture telescopes or optical collectors is not greater than  $2d$ , where  $d$  is a diameter of one of the sub-aperture telescopes or optical collectors.

The other claims currently under consideration in the application are dependent from the independent claims discussed above and therefore are believed to be allowable over the applied references for at least the same reasons. Because each dependent claim is deemed to define an additional aspect of the invention, however, the individual consideration of each on its own merits is respectfully requested.

In view of the foregoing amendments and remarks, the entire application is believed to be in condition for allowance and such action is respectfully requested at the Examiner's earliest convenience.

Applicants also respectfully request the attorney docket number be changed from "040092-019710US" to "070602-0313."

Application No.: 10/627,404

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Respectfully submitted,

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